



DRUG-EXPOSED CHILDREN


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Objectives

- Discuss Neonatal Abstinence Syndrome
- Discuss the impact of drug exposure on children both short-term and long-term
- Discuss testing for drug-exposed children
- Describe the impact of adverse childhood experiences on children


Neonatal Abstinence Syndrome

- Abrupt discontinuation of chronic fetal exposure to substances that were used or abused by the mother during pregnancy
- Generalized multisystem disorder
 - Predominantly involves the central and autonomic nervous systems, as well as the gastrointestinal tract
- Withdrawal due to prolonged maternal opioid use may be severe and intense
 - Rarely fatal but can cause significant illness
 - Often results in prolonged hospital stays




Incidence of NAS in NC

- 0.3 per 1,000 births in 2000 to **6.4 per 1,000 births in 2013**
- More than twenty-onefold increase



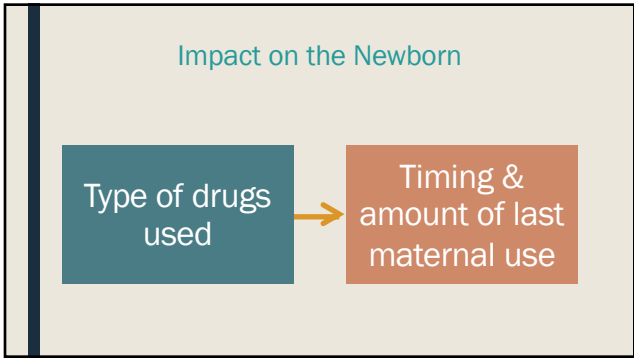
Drugs Associated with NAS

- Opioids are the most commonly abused drugs
- Poly-drug abuse is extremely common
- Various other drugs identified are
 - *Nicotine, cocaine, heroin, benzodiazepines, amphetamines, and selective serotonin reuptake inhibitors (SSRIs).*

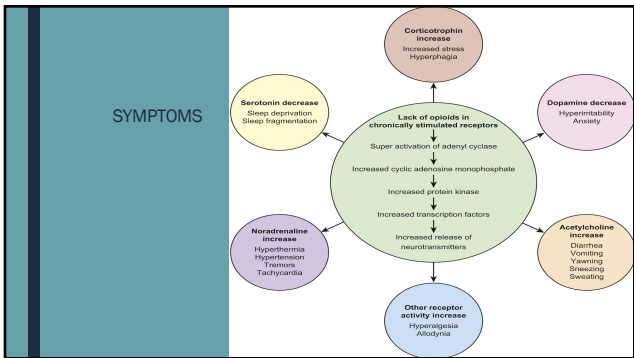


NAS SYMPTOMS – WHAT ARE THE DIFFERENT TYPES OF SYMPTOMS?

WHAT IS THE SEVERITY OF SYMPTOMS OR HOW IS SEVERITY DETERMINED?

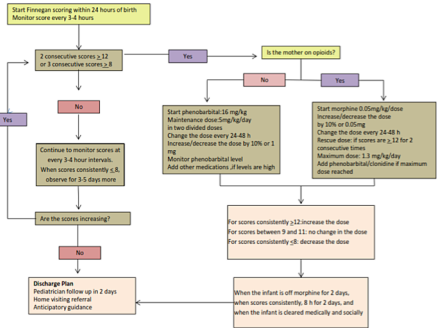


- ### Presentation of Symptoms
- Infants exposed to short-acting substances like heroin
 - *Withdrawal signs can be seen within first 24 hours*
 - Long-acting agents like methadone and buprenorphine
 - *Withdrawal signs may be seen 1 to 3 days after birth*
 - Occasionally, withdrawal signs may be delayed until 5 days of age or later
 - Opioid-exposed infants should be observed in the hospital for at least 5 to 7 days with a close follow up care in place.



NAS Scores – What do they mean?

Item	0	1	2	3	4	5	6	7	8	9	10	11	12
0-12 Sum of items 1-12 = NAS Score	0	1	2	3	4	5	6	7	8	9	10	11	12
1. Eyes closed	0	1	2	3	4	5	6	7	8	9	10	11	12
2. Breasts	0	1	2	3	4	5	6	7	8	9	10	11	12
3. Mouth open	0	1	2	3	4	5	6	7	8	9	10	11	12
4. Arms extended	0	1	2	3	4	5	6	7	8	9	10	11	12
5. Head tilted back	0	1	2	3	4	5	6	7	8	9	10	11	12
6. Mouth tightly closed	0	1	2	3	4	5	6	7	8	9	10	11	12
7. Mouth wide open	0	1	2	3	4	5	6	7	8	9	10	11	12
8. Mouth open	0	1	2	3	4	5	6	7	8	9	10	11	12
9. Mouth open	0	1	2	3	4	5	6	7	8	9	10	11	12
10. Mouth open	0	1	2	3	4	5	6	7	8	9	10	11	12
11. Mouth open	0	1	2	3	4	5	6	7	8	9	10	11	12
12. Mouth open	0	1	2	3	4	5	6	7	8	9	10	11	12



Moving to "Eat, Sleep, Console"

- Non-pharmacologic measures or pharmacologic measures

What Do We Know About Long-Term Impact of NAS? Not enough.....

- Whether prenatal opioid exposure or postnatal opioid treatment has any long-term effects on the newborn brain is largely unknown
- No longitudinal follow-up studies have extended beyond the first few years of life
- Animal experiments have neither proven nor disproven the effects of chronic maternal opioid administration on dendritic growth and development in the fetus
- Need for studies of long-term outcomes in these children
- No significant adverse long-term outcomes were reported among neonates who were exposed in utero to SSRIs, SNRIs, TCAs, benzodiazepines, or methamphetamines.

Kocherlakota, Pediatrics, 2014

Challenges in Researching Long-term Outcomes from NAS

- Confounding factors which may also have adverse effects on children's health, development, and learning
- Many infants with NAS have been exposed to more than one substance prenatally, at different times during the pregnancy, and the health and well-being of their mothers during their pregnancy may not have been well documented
- Caregiving environment after birth and early experiences are of critical importance to development yet may not have been accounted for in the reviewed studies
- Circumstances including poverty, parental mental health problems, exposure to family violence, chronic stress, trauma, and out-of-home placements are often interrelated and may affect infants with NAS disproportionately.
- Small sample sizes decrease ability to generalize to the whole NAS population

Maguire, et al., 2016

WHAT SOME STUDIES HAVE SHOWN

Potential Impact

- Otitis media
- Vision problems
- Motor development problems
- Behavioral and cognitive problems
- Child abuse and neglect
- Risk of future drug use
- Risk of SIDS or SUID

Degree of proof needed to demonstrate absolute causation?

CONSIDERATION FOR EARLY INTERVENTION, ENVIRONMENT, PARENTING,

Child Abuse and Neglect

- Vulnerable environmental settings
- Exposure to home and community violence, and
- Parental opioid abuse appear to point to a heightened risk of child abuse and neglect in the parenting of children with NAS

These factors would a critical part of the assessment of the safety of the child with the caregiver(s)

Impact on Parenting

- Impact on the capacity of substance-dependent mothers to safely perform significant developmental tasks with their infants (Velez, et al., 2013)
- Lack of responsiveness to children's needs and heightened punitive parental reactivity (Chaplin, et al., 2013)
- Lack of empathy, inappropriate expectations of the child, and belief in use of corporal punishment (Rizzo, et al., 2014)
- Complex interpersonal trauma is associated with increased maternal aggression and physical punishment, along with dissatisfaction and difficulty with parenting (Velez, et al., 2013)

Impact on Parenting

- Repeated studies found a majority of pregnant or parenting women entering drug treatment endorsed a history of physical and emotional abuse often witnessed by children (Kaltenbach, 2013 & Velez, et al., 2006)
- Substance-abusing parents report significantly more physically abusing and neglectful behaviors toward their children than study subjects not abusing drugs or alcohol (Kelleher, et al., 1994)
- With 40 to 56% of abusive or neglectful parents diagnosed with a substance abuse disorder, the substantive association between substance abuse and the risk of child maltreatment (abuse and neglect) tripled when controlled for other environmental and psychiatric factors (Kelleher, et al., 1994 & Chaffin, et al., 1996)

Impact on Parenting

- In a 2003 study, the increase in the risk of childhood abuse doubled when associated with parental substance abuse (Walsh, et al., 2003)

Adverse Childhood Experiences

- Landmark adverse childhood experience (ACE) study
 - Drew a direct relationship between childhood exposure to household dysfunction, emotional, physical, and/or sexual abuse, including substance use by persons in the home, and later health outcomes
- ACEs are considered strongly associated with alcohol and drug abuse in exposed children
- Adverse Childhood Experiences have been linked to
 - risky health behaviors,
 - chronic health conditions
 - low life potential
 - early death



DRUG TESTING

Type of Testing	Time-Frame
Meconium	Up to 20 weeks
Umbilical Cord	20 weeks
Urine	2-3 days

BIRTH

Children are in a safety resource placement (SRP) and drug test performed after placement out of the home. Is drug exposure from parents or SRP? Also, is there a way to narrow down exposure time frames?

Yes and No.....it depends

Type of Testing	Time-Frame
Fingernail	90-120 days
Hair	90 days
Urine	2-3 days
Oral	2-3 days
Blood	12-24 hours

POST-NATAL DRUG EXPOSURE

FOR OLDER CHILDREN WHO TEST POSITIVE BUT DON'T EXHIBIT ANY SYMPTOMS OR ISSUES FROM EXPOSURE, WHAT IS THE IMPACT ON THE CHILDREN?

LONG TERM EFFECTS POSSIBLE?

MAY THIS VARY DEPENDING ON TYPE OF DRUG EXPOSURE?

- 1) Direct impact of a positive drug screen will be challenging to determine
 - a. However, there are exceptions such as exposure to meth production
 - b. Does the child have symptoms?
- 2) Critical to have a thorough assessment of
 - a. Family functioning - DV, etc.
 - b. Safety issues in the home
 - c. Medical, developmental, mental health issues for the child

Levels on drug screens – How do low numerical positive results relate to harm to the child? How do high numerical levels relate to harm to the child?

- Drug testing typically occurs at one point in time
It is not possible to know what the total drug exposure has been over time without continuous testing over time
- The results only indicate what the level is at the time of testing
 - Consecutive testing may help identify when drug levels are rising or falling
- There is no reliable scientific data to date which helps to identify long-term level of harm based on degree of exposure
- Ability to identify short-term impact may potentially be identified if the child is symptomatic, presents to medical care & drug tox screens are collected
 - Respiratory depression
 - Respiratory arrest
 - Neurological changes
 - Cardiac arrest

How kids are exposed to drugs may affect determination of abuse/neglect – contact with person, breathing smoke, ingestion, etc. Can you tell from results on a screen how a child was exposed? Will method of exposure to drugs affect drug screen results?

- Drugs may be ingested through the skin, respiratory system, GI system and blood stream
- Drug screens are not able to specify route of exposure
 - US Drug Testing Laboratories, Inc. does have a test, ChildGuard, for hair that reportedly can determine presence of the native drug vs drug metabolites produced by the body (<http://www.usdtl.com/testing/child-hair-drug-test-labs>)
- Will method of exposure impact drug screen results?
 - Concentration (amounts, timing) and timing of screening are most likely to impact screening results
 - Difficult to determine method of exposure for a number of the drugs

As DSS attorneys what types of effects of exposure should would be looking for to help strengthen argument of risk of harm or actual harm to the child?

- As discussed, long-term effects will be challenging to address in the legal setting unless
 - There were significant complications from the exposure leading to poor neurological outcomes
 - Respiratory arrest
 - Cardiac Arrest
 - Seizures
- Were there short-term effects documented by a medical provider?
 - Respiratory failure/arrest
 - Cardiac arrest
 - Seizures

Support & Monitoring for the Infant - Are the caregivers able to provide?

- CC4C
- PCP visits
- Referrals to specialists, including developmental-behavioral pediatricians, can help identify and assess other areas in which the child may need support. Areas of focus for the pediatrician with the infant will include:
 - motor deficits and cognitive delays;
 - hyperactivity, impulsivity, and attention-deficit in preschool-aged children, and in addition to school absence, school failure, and other behavioral problems in school-aged children; and
 - growth and nutritional benchmarks to identify failure to thrive and short stature

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